

WHAT IS CLAIMED IS:

1. A data transmission/reception system comprising:

5 a plurality of information transmitters connected to nodes on a bus, for transmitting/receiving data through a connection established between the nodes;

a connection establishing device for establishing a connection at each node;

10 a connection status information holding device for holding connection status information indicating a managing status of bus resources while updating it during the execution of the connection establishment at each node;

a connection status information referring device for referring to the connection status information; and

15 a processing executing device for executing predetermined processing to avoid unmanageable status of the bus resources when it is determined that the managing status of the bus resources is out of a permissible range.

20 2. The data transmission/reception system according to claim 1, wherein

a plurality of connection establishments are provided corresponding to types of the connections, and

25 the connection status information holding device holds the connection status information for each connection establishment.

3. The data transmission/reception system according to claim 1,

wherein

the processing executing device generates bus resetting if a predetermined number or more of bits of the connection status information set in unknown statuses are present among connections to be established on the bus.

4. The data transmission/reception system according to claim 1, wherein

the managing status of the bus resources indicated by the connection status information includes, in addition to an unknown status, a valid status, an invalid status, and a status of processing being executed.

5. The data transmission/reception system according to claim 1, wherein

the connection establishments include processing for allocating a channel for interconnecting the nodes, and processing for allocating a bandwidth necessary for data transmission/reception, and

the connection status information holding device updates the connection status information to an unknown status if a transaction in each processing results in a timeout or a data error.

6. The data transmission/reception system according to claim 2, wherein

the bus is a serial bus compliant with IEEE 1394 Standard, and the plurality of connection establishments include establishment of a Broadcast-out connection, establishment of a Broadcast-in connection, and establishment of a Point-to-point connection.

7. The data transmission/reception system of claim 6, wherein the plurality of connection establishments includes restoration of the Broadcast-out connection, restoration of the Broadcast-in connection, and restoration of the Point-to-point connection in accordance with connection restoration carried out to restore the connection at each node before a passage of predetermined time after resetting of the connection established following the bus resetting.

8. A connection establishing method for establishing a connection between nodes of a data transmission/reception system in which a plurality of information transmitters connected to the nodes on a bus transmit data, comprising the processes of:

holding connection status information indicating a managing status of bus resources while updating it during the execution of the connection establishment at each node;

referring to the connection status information; and

executing predetermined processing to avoid unmanageable status of the bus resources when it is determined that the managing status of the bus resources is out of a permissible range.

9. The connection establishing method according to claim 8, wherein

a plurality of connection establishments are provided corresponding to types of the connections, and

the connection status information holding process holds the connection status information for each connection establishment.

10. The connection establishing method according to claim 8,
wherein

5 the predetermined processing executing process generates bus
resetting if a predetermined number or more of bits of the connection
status information set in unknown statuses are present among
connections to be established on the bus.

10 11. The connection establishing method according to claim 8,
wherein

the managing status of the bus resources indicated by the
connection status information includes, in addition to an unknown status,
a valid status, an invalid status, and a status of processing being executed.

15 12. The connection establishing method according to claim 8,
wherein

the connection establishments include processing for allocating
a channel for interconnecting the nodes, and processing for allocating a
bandwidth necessary for data transmission/reception, and

20 the connection status information holding process updates the
connection status information to an unknown status if a transaction in
each processing results in a timeout or a data error.

25 13. The connection establishing method according to claim 9,
wherein

the bus is a serial bus compliant with IEEE 1394 Standard, and
the plurality of connection establishments include

establishment of a Broadcast-out connection, establishment of a Broadcast-in connection, and establishment of a Point-to-point connection.

14. An information transmission/reception apparatus
5 connected to a node on a bus, for transmitting and receiving data through a connection established with another node, comprising:

a connection establishing device for establishing the connection with another node;

10 a connection status information holding device for holding connection status information indicating a managing status of bus resources while updating it during the execution of the connection establishment;

a connection status information referring device for referring to the connection status information; and

15 a processing executing device for executing predetermined processing to avoid unmanageable status of the bus resources when it is determined that the managing status of the bus resources is out of a permissible range.

20 15. The information transmission/reception apparatus according to claim 14, wherein

a plurality of connection establishments are provided corresponding to types of the connections, and

25 the connection status information holding device holds the connection status information for each connection establishment.

16. The information transmission/reception apparatus

according to claim 14, wherein

the processing executing device generates bus resetting if a predetermined number or more of bits of the connection status information set in unknown statuses are present among connections to be established on the bus.

17. The information transmission/reception apparatus according to claim 14, wherein

the managing status of the bus resources indicated by the connection status information includes, in addition to an unknown status, a valid status, an invalid status, and a status of processing being executed.

18. The information transmission/reception apparatus according to claim 14, wherein

the connection establishments include processing for allocating a channel for interconnecting the nodes, and processing for allocating a bandwidth necessary for data transmission/reception, and

the connection status information holding device updates the connection status information to an unknown status if a timeout or a data error occurs in each processing.

19. The information transmission/reception apparatus according to claim 15, wherein

the bus is a serial bus compliant with IEEE 1394 Standard, and the plurality of connection establishments include establishment of a Broadcast-out connection, establishment of a Broadcast-in connection, and establishment of a Point-to-point connection.

20. The information transmission/reception apparatus according to claim 15, wherein

the plurality of connection establishments includes restoration
5 of the Broadcast-out connection, restoration of the Broadcast-in connection, and restoration of the Point to point connection in accordance with connection restoration carried out to restore the connection at each node before a passage of predetermined time after resetting of the connection established following the bus resetting.

10